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FLEETS OF THE WORLD.*

By CAPTAIN S. B. LUCE, U. S. NAVY.

It was a fine conception to draw up all the fleets of the world in one grand review for the inspection and criticism of the student and scholar; and it is to be hoped that the author of "Fleets of the World" will be "encouraged," as he says in his preface, "to persevere in his undertaking," now so happily begun. As the history of fleets of war vessels, to which our author exclusively alludes, has much to say in regard to their military movements, we shall begin our examination of these works on the Socratic principle of first defining our terms. The word Tactics is derived from the Greek ΤΑΚΤΙΚΟΣ—*capable of arranging; relating to drawing up; as to arrange or draw up the line of battle.* Hence Tactics has been defined as the art of arranging troops, (or ships), for battle, or moving them while in the presence of the enemy. A simpler definition is that of Aeneas Tacticus who calls it "the science of Military Movements." The subject has generally been divided into two branches, grand tactics, or the tactics of battle; and elementary tactics, or the tactics of instruction.

* "Fleet Tactics under steam," by Foxhall A. Parker, Commodore U. S. Navy. D. Van Nostrand, Publisher. "Fleets of the World", by Commodore Foxhall A. Parker. D. Van Nostrand, 23 Murray St. New-York.

NOTE. This paper was read before the issuing of volume II., but was withheld for revision by the author.

The history of naval warfare, of which tactics forms so important a part, may be divided into the three grand periods of oars, sails, and steam.

Oar Period. Beginning with the earliest authentic history we find that among the Greeks and Phœnicians the higher officers, and often the entire *personnel* of navies, fought on shore as well as at sea. It was natural, therefore, that the tactics of the land army, which was of an earlier growth, should be applied to the sea army as far as the nature of the two elements would admit. To understand, then, the character of the movements of a large fleet of galleys, numbering not infrequently two or three hundred, when preparing for, or actually engaged in, battle, it will be necessary to examine first the elementary formations of the army. In both the Athenian and Spartan armies the tactical unit was the *Enomotia* of 32 men, ranged in four files, eight deep. The phalanx, therefore, when in line, was eight deep. On a march, the column, the usual order in marching, would then be of "fours," or of "eights" according as it broke from either flank to the front, or was marched to the right or left. The line of battle was most commonly of the parallel order. This order naturally suggested itself even to the barbarians and was practised long after war came to be studied as a science. But in the battle of Mantinea, Epaminondas formed his line in the concave order, with the attacking wing strengthened by the double echelon, a combination considered as very powerful to this day. "Epaminondas," says Xenophon, "formed of his cavalry a strong wedge-like body." (Hellenics Bk. VII. 5.24.) In another place he compares the formation to the beak of a galley. "Epaminondas led his army like a ship of war with its beak directed against the enemy." To resist the attack of a superior force, the Greeks, copying from the Egyptians, were accustomed to form in a circle, and, placing their shields together, make a strong rampart difficult to penetrate. In the Cyropedia we are told by Xenophon that "the Egyptians formed a circle, so that their arms faced the enemy, and sat down under the shelter of their shields." Against this rampart Cyrus repeatedly hurled his cavalry in vain. In the Retreat of the Ten Thousand, "Xenophon and his party, being much harassed, marched in a circle, so as to hold their shields together as a defence against the missiles; and so with great difficulty crossed the river Caicus." In the Commentaries of Hirtius (African war ch. xv.) it is stated that "the legions being surrounded by the enemy's cavalry were obliged to form themselves in a circle, and fight as if enclosed with barriers."

The same formation was known to medieval times, being mentioned

in the account of a battle fought between the English under the Saxon king Harold and the Northmen under Tostig, A. D. 1066. It is not a little singular, if the digression be permitted, that the circular formation of the ancient Egyptians should have been recently revived in the U. S Army (see School of Battalion, ¶ 535 Upton's Infantry Tactics.) "On the order: *Rally by Divisions*, the companies close in quick time towards the centre of division, and form a circle to the rear of the line, &c., &c."

The hollow square also was known to the ancients, being particularly mentioned in the account of the disastrous retreat of the Greeks under the unhappy Nicias, after their terrible series of reverses at Syracuse.

From the fact of the shield being carried on the left arm, the right remained uncovered, hence the right was considered the point of danger and consequently the post of honor. This idea prevailed both in the army and in the fleet, the command of the right wing in line being regarded as the highest distinction. Now it will be found that these several tactical formations of the army—the line for the order of battle, the column for facility of movement, the echelon or wedge shape for strength, the circle for defence—constituted in the main the several orders of naval tactics also.

The earliest authentic record of fleet evolutions is given by the "Father of History" himself. About twenty years before the battle of Salamis, or 500 B. C., Dionysius the Phocæan took command of a fleet belonging to the Ionian Greeks. Whereupon "he proceeded every day to make the ships *move in column* and the rowers to ply their oars and *exercise themselves in breaking the line*" (Herodotus Bk. VI. 12.) While this is the earliest example furnished by history of the practice of a regular system of tactical movements by a fleet, it fortunately presents at the same time the clearest indications of what those movements were. The passage is valuable also as showing that thus early the breaking of the enemy's line was a cardinal point in the system of naval warfare.

A few cases selected at random from various authors will illustrate the principal fleet formations of the ancients. On the invasion of Greece by Xerxes, the Persian admiral brought his fleet down the coast of Magnesia in "Column of Eights", the Greek phalanx in Column.*

* To avoid encumbering the text, the more striking points of similarity between the ancient and the modern systems of naval tactics will be indicated by foot notes: thus, the "Column of Eights" of the Persian fleet could be formed by signal No. 138 of the U. S. naval signal book, which is based on Fleet Tactics under Steam, by Commodore Parker.

In one of the battles off Artemisium, where the Confederate Greek fleet covered the right flank of Leonidas at Thermopylæ, the Persian line-of-battle was in the form of a crescent—the concave order of the army. The Greeks, greatly inferior in numbers, at a signal, brought the sterns of their ships together, turning their prows on every side towards the barbarians so as to form a circle—the circular formation of the army—"after which, at a second signal,* though closely pressed they darted out and fell bravely to work." (Herodotus). On the fall of Thermopylæ, Artemisium ceasing to be a strategic point, the Greek fleet passed down the straits of Eubia in column, in inverse order, the left wing leading.

But it is not till we reach the Peloponnesian war that we read of those tactical evolutions which, for rapidity, and precision of execution, command our admiration to this day.

The triremes were the line-of-battle ships of the period. As they were all homogeneous, that is all built on the same lines and propelled by the same means, their arcs of evolution were equal; hence were practicable, with a numerous fleet, movements which, these elements wanting, could only result in endless confusion.

Moreover, the endurance of the rowers and the high rate of speed at which they could propel the light triremes, rendered a certain celerity of movement possible which at this day is difficult to realize †. When to this it is added that the exercising of the fleet was incessant, it may readily be understood how a master mind, no uncommon thing in that age of high intellectual development, could manœuver a vast fleet as though it were a perfectly adjusted machine.

In a battle off Naupactus (the modern Lepanto), in the third year of the Peloponnesian war, we find the Lacedemonian fleet passing up the straits in "*Column of fours*," ‡ and, at a signal, suddenly swinging into line of battle by "*Fours left wheel*," ‖.

* How these signals, so frequently alluded to by Herodotus and Thucydides, and evidently so efficacious for the manœuvering of a large fleet were made, is fully explained in Potter's American Monthly, April, 1877. Article, Signals and Signalling.

† "La grande vitesse que l'on pût obtenir de ces navires, (triremes) victesse qui, d'apres quelques circonstances bien connues, pouvait atteindre deux lieues marine ā l'heure." (Onze kilometres—equal to 6.8 statute miles.)

Essai sur les navires a rangs de rames des Anciens. Par P. Glotin Ex. Lieut. de Vaisseau. Paris; Arthur Bertrand, 1862.

‡ Signal No. 111. ‖ Signal No 409.

In the battle off Cynossema in the Hellespont, the tactical skill of Thrasybulus, commanding the Athenian fleet, and that of Mindarus, commanding the Peloponnesians, are finely displayed. The Athenians leaving Elœus, near the mouth of the straits, pulled up the European shore, in seventy-six vessels, towards Sestos (to the northward and eastward,) in "column of vessels," * the left wing leading.

Thrasybulus, a distinguished Athenian, commanded the right wing, now the rear.

The Peloponnesians on their part had eighty-six vessels. The right was held by the Syracusans, esteemed at that time the best fighters; wing, the left, which was also the van, and contained the fastest ships, being under the command of Mindarus himself. The Peloponnesians, putting out from Abydos, on the Asiatic shore, extended their line, also in "Column of vessels," towards Dardanus, or to southward and westward, their object being to envelope the Athenian right, to prevent his escaping to the open sea, and to drive his centre on the shore. The Athenians, observing this, reversed the right wing, † and pulled to the southward and westward, to avoid being out-flanked. The left wing however, continuing on towards Sestos, had now passed Cape Cynossema, shutting out the other wing, and leaving the centre a weak line of scattered ships. The Peloponnesians, fell upon the centre, drove the ships aground, and landed to follow up the advantage. This partial success of the Peloponnesians, by carrying them too far, threw their line into confusion. Thrasybulus then ceasing to extend his wing, brought his vessels into line by "Wing by the left flank," ‡ fell upon the enemy, and, having put them to flight, attacked the victorious but disordered centre, and threw it into a panic.

The Syracusans had by this time given way to Thrasylus and his left wing, and now took to flight on seeing the rest routed. (Thucydides, Book VIII, 101—107.) The moral and strategic results of this victory were very important to the Athenians. Depressed by the terrible reverses at Syracuse only two years before, the present success raised their spirits; while a Peloponnesian squadron guarding the coasts of Eubœa, which had revolted from Athens, had now to be called to the Hellespont, to strengthen the shattered forces of Mindarus.

This battle is the last recorded by Thucydides. As an admiral of the Athenian navy his descriptions of sea-fights are particularly valuable.

*Signal 54. †Signal No. 436. ‡Signal No. 298.

At the battle of Arginusæ, the Athenian fleet was drawn up in three grand divisions. The right wing was composed of sixty ships divided into four squadrons of fifteen each, two squadrons in the front line and two in the rear line as supports.*

The centre was in a single line, but one of the isles of Arginusæ (in its immediate rear) gave it great strength; the left wing was similar in its disposition to the right.† The object of this particular formation was to prevent the enemy from practising those manœuvres known as the *Diekplous* and *Periplous*, and causing injuries which the trireme was well calculated to inflict but not to receive. *Diekplous*, from *dia-ekpleō*, to break through, meant to break through the enemy's line for the purpose of turning and ramming this ships in the flank or rear, or raking his oars from abaft. *Periplous*, from *periplecō* meant the sailing round the enemy's fleet, to reach his rear by a flank movement, for the same purpose of ramming in the more vulnerable parts, or of cutting away his oars.

The proximity of the land ensured the centre against the *diekplous*, while the rear line on the wings, like a second line of infantry, supported the advance. The Peloponnesian fleet bore down to the attack in a single line. The battle was obstinately contested, but the Athenians, owing to their strong position, gained a complete victory.‡ The trireme, having its bow specially designed for ramming, was, in the hands of a bold and vigorous crew and managed by skillful officers, the real

* Sig., No. 310.

† Since writing the above we have read with much pleasure the lecture on "Ancient Naval Tactics" by the Rev. Ed. Warre, M. A., before the Royal United Service Institute, London, Journal of the R. N. S. I. No. 88. The Reverend lecturer forms the wings of the Athenian fleet in columns of divisions. If his interpretation of Xenophon be correct, the Athenians were guilty of a great tactical blunder, which even their success does not excuse. The probability is that each wing was formed in a double line, with thirty galleys in the front, and thirty in the rear, as stated in the text.

‡ There was an unfortunate sequel to this great victory. Six of the Athenian Captains were, on their return, brought to trial for not rescuing the unfortunates left clinging to the wrecks, a gale coming on at the time. They were found guilty and condemned to drink hemlock. Like poor Byng of later times they were the victims of party politics!

weapon of attack, a condition which rendered it necessary that, when in an attitude for battle, the weapon should be pointed towards the enemy; and on this theory their system of tactics was based.

The battle once joined, it was by extraordinary strength and precision of rowing, by rapid and sudden turns, by feints, and skillful handling generally, that the Athenian trierarch, or captain, sought to drive the sharp beak of his vessel, against his enemy's side, or stern, or to cut away his oars. Nor was its facility for stern-board the least noticeable feature of the trireme. In a fight off Corcyra (Corfu), Nikostratus, commanding a squadron of but twelve Athenian triremes, did not hesitate to engage a force of thirty three Peloponnesians, although the latter had a division of twenty more near at hand.

The Athenian, having plenty of sea room for manœuvering, disregarded the numerical superiority of his adversary, more particularly as two of his twelve triremes were the picked vessels of the Athenian navy—the *Salaminia* and the *Paralus*. Nikostratus, avoiding entanglement with their centre, hung on their flank, and as he presently managed to ram and sink one of their vessels the Peloponnesians formed in circle and stood on the defensive.

The Athenians rowed round and round this circle trying to cause confusion by feigned attacks, and they might have succeeded, if the remaining twenty Peloponnesians, seeing the proceeding, had not hastened to join their comrades. The entire fleet of fifty-three triremes now assumed the offensive, and advanced to attack Nikostratus, who retired before them by *backing astern* and *keeping his ships heading towards the enemy*. In this manner he succeeded in drawing them away from the harbor so as to enable most of the allies, the Corcyreans, to get safely into port.

In the military schools of Greece the instruction was not confined to the elementary branches of the art of war. Those who would excel in the art were obliged not only to be tacticians but to understand the greater and more remote objects of tactical movements, of a battle, a campaign, or of a war. The general of an army was therefore called *Strategos*, whence our word *strategist*; while the commander-in-chief of a fleet was termed *Nauarchos Strategos*, naval strategist. Indeed there is abundant evidence to show that the Greek nauarchos, or admiral, was very far from being ignorant of those principles on which the science of war depends. From the battle of Lâdé to that of Salamis during the miserable Egyptian compaign, from the fatal disasters of Syracuse to the final catastrophe at Ægos Potamos, it will be found

that most of the movements belonging to the grand tactics of the present day were not unknown to the Greeks.

Severing an enemy from his base of operations, cutting off his supplies, breaking and doubling on his line, diversions, flank attacks, turning the flank, throwing a heavy force on a single point and thus beating him in detail, all seem to have been well understood; while boarding, the use of boarding bridges, ramming, crippling by various methods to prevent escape, grappling, surprises, feints, fire-ships (as at Syracuse), nearly all the expedients, in short, known to naval battles of modern times, save such only as depend on explosives for their action, were practised at one time or another by the Greeks. They may well be termed our masters in the art of war.

The Romans took their system of naval tactics from the Greeks. In their first essay in sea fighting, however, being totally inexperienced in the management of fleets, they attempted no manœuvering; but, closing at once with the enemy, they reduced the issue of the battle to a hand-to-hand conflict, in which Roman valor was sure to prevail over the less hardy Carthaginian. Their earliest effort, on opening the first Punic war, was not encouraging; but Duilius soon after gained off Myle, one of those great victories which serve to mark an era.

It was here that the *Corvus*, or boarding bridge, "invented by some one in the fleet,"—Polybius says,—but used by the Spartan Leotychides, at Mycale, some 200 years before, mainly contributed to the splendid success. (260 B. C).

The Phœnicians were, by far, the better seamen; but, besides their greater energy and intellectual superiority, the Romans brought their thorough knowledge of, and wide experience in military affairs to bear upon their naval enterprises. Four years after the above, we find the Romans to have greatly improved in their tactics. At the battle of Ecnomus the Roman fleet, having on board the choice of Roman troops, was separated into four grand divisions, each bearing a double name. The first division was called the *first legion* and first squadron, the second and third were similarly named; while the fourth was styled the *triarii*, the name given to the last division of the army. The first and second squadrons, composed of men-of-war alone, formed the right and left wings of the line of battle. The two admirals were in the centre of the line; the one, Marcus Atilius Regulus, (of unhappy memory), Roman consul and admiral, being on the left of the right wing; the other, Lucius Manlius Volso, on the right extremity of the left wing. In anticipation of an engagement, the two admirals drew

ahead, the ships of their respective wings following in succession, in close order, bringing the two wings into the double echelon formation, with the two admirals at the apex.* The third squadron, in line, and having the transports in tow, formed the base of, and completed the triangle.

The triarii, also in line, and so extended as to cover both flanks of the advance, followed as a reserve. The Roman fleet numbered 330 line-of-battle ships—mostly quinquiremes (such had been the advance in Naval architecture) and carried about 140,000 men.

The Carthaginian fleet, consisting of 350 ships and about 150,000 men, had three squadrons in line, their right extending well out to sea with the view of enveloping the Roman left. The fourth division on the left of the line, was well in with the coast of Sicily, and formed in column of ships, concaved from the shore;* its design being to pull up along the coast, and fall upon the right flank of the Romans. The object of the wedge form of the Roman advance was to pierce and break the enemy's centre; but the skillful and wily Carthaginians retreated, in conformity to previous orders; drawing on the 1st and 2d legions and separating them from the line of transports and the triarii. When the separation was deemed sufficient, the Carthaginians, upon a signal from Amilcar, suddenly assumed the aggressive, and fell upon their pursuers with the utmost fury. Hanno, in command of the right, now bore down on the left flank of the triarii, while the inshore division, moving by the oblique into line,* fell upon the Roman third legion and transports. Thus three separate and distinct battles were raging at the same time. The fight was obstinate, and the issue for some time doubtful. The Carthaginians were far superior in the lightness of their vessels, and in their skill and rapidity of advancing and retreating, and attacking on every side; while the Romans relied for success on their steadfast courage and on their *corvi*. The latter prevailed; and having gained the victory and refitted, Regulus steered for Africa, the objective point of the Roman army.

In the history of the Alexandrian war we have an account of an en-

* Signal No. 240, or perhaps from Regulus No. 229, and from Manlius Volso, No. 228.

† In Mr. Hampton's translation of Polybius (London 1773) this squadron is said to be formed in the shape of a *forceps*. It is hardly necessary to explain that no such order existed. It was the concave line pulling by the right flank, thus forming a concave column.

‡ Signal No. 304.

gagement in which Cæsar himself commanded the fleet; but as the plan of the battle seems so similar to that of the Athenians at Arginusæ, further description is unnecessary. In the history of the Great Civil War there is much to interest the naval student, but little insight into the prevailing system of tactics is given beyond the examples already cited. It is much to be regretted that none of the writers of antiquity thought it worth while to transmit to posterity a dissertation on naval warfare; but it was doubtless considered that a treatise on the art of war embraced both the land and the sea forces.

The battle of Actium scarcely comes within the range of critical notice. Anthony, indeed, so disposed his fleet as to extort the commendation of his great rival; while the genius of Marcus Agrippa, who handled the Roman fleet, was never more conspicuous,* yet the battle was thrown away. While victory still wavered in the balance Cleopatra sailed away and was speedily followed by "the noble ruin of her magic, Antony." Perhaps the only useful tactical lesson taught by this battle is in the advantage gained by the use of the light and swift *liburnæ*, adopted by the Romans from the Liburnians, over the heavy and unwieldy galleys of Anthony's fleet.

We have seen in the great "three-decker" and in the huge five masted iron-clads of our own days the same tendency to over-growth in ships of war, that existed among the ancients.

The foregoing examples have been selected from the history of naval battles covering a period of nearly five hundred years, without regard to order or political importance, and with the sole view of arriving at some conclusion in regard to the system of naval tactics which prevailed with the ancients; or, more particularly, with the Greeks and Ro-

* Plutarch has assigned to Augustus the command of the Roman fleet. He did so command theoretically, by virtue of his position; but he had no capacity for naval affairs. Agrippa on the contrary was one of the most renowned and successful naval leaders of his age. Virgil, who wrote the Æneid to please and do honor to Augustus, says, or sings, in allusion to the battle:

"With favoring gods and winds to speed,
Agrippa forms the line:
The golden beaks, war's proudest mead,
High on his forehead shine."

The latter is an allusion to the *corona navalis* bestowed for a great victory over the fleet of Sextus Pompey. For the victory of Actium, he received the *vexillum cæruleum*, or sea-green flag.

mans. The reader, we think, will have already anticipated us in the deduction that their elementary tactics comprehended the three simple orders of *line, column* and *echelon*, with the circular formation (equivalent to the hollow square) for resisting the attacks of a superior force; and that their line of battle was, what has been familiarly known in modern tactics under sail, as the *line abreast*, every ship heading for the enemy, or in the direction of the attack. There were, also, flank, oblique and perpendicular movements. The Greeks seem to have separated their fleets into the three divisions of van, centre and rear, when in column; and right and left wings and centre, when in line.

The Romans had four divisions. The line, with both flanks thrown forward, so as to form the concave order or crescent shaped line, was often made use of, as it enabled the admiral, in the centre, to see both wings, and facilitated the transmission of signals.

One of the most graphic descriptions of an ancient Sea-fight is given by Polybius in his account of a battle between the fleets of Philip of Macedon and Attalus king of Pergamus. "Both fleets, he says, "turned their prows the one against the other and, amidst the sound of trumpets and the noise of animating cries, engaged in set battle." The crushing in of the sides of great quinquiremes, and octoremes, the clashing of huge oars as they intermingled in the fray, the shouts of the soldiers and the cries of despair as the shattered wrecks subside beneath the wave—all the din and confusion of a great battle in which the loss to Philip alone was nine thousand men, are plainly discernible in the picture he has so vividly drawn. Add to this the bursting of monster shells, the explosion of torpedoes and the roar of escaping steam, and one may gain some faint idea of what a modern fleet fight would be. In an account by the same author of the bold operations and final capture of a Rhodian blockade runner, one might almost fancy the scene taken from the history of the blockade during the late civil war.

With the breaking up of the Roman Empire and the disappearance of the ancient civilization, naval tactics with many other arts was buried amid the crumbling ruin. What those arts must have been we may judge from the universal concurrence, of modern writers in comparing productions of modern art with the master-pieces of antiquity as the highest standard of excellence. A modern historian, describing the battle of Sluys, exhausts his praises when, in commenting on the skillful combinations that distinguished the movements of the English fleet, he compares it to "some master-piece of the Athenians." He could have paid no higher compliment to the tactical skill of the English king.

There seems to be but little doubt that the medieval navies revived the naval tactics of the ancients. Outside of the Mediterranean the Norsemen were the great sea fighters, but the only approach to any regular system was in their custom of lashing their vessels together in line to prevent the attack from breaking through.

The old chroniclers give us some interesting details in regard to the fleet of Richard I, during his voyage to the Holy Land. On leaving Messina the fleet was formed in the order of convoy. In the van were three large ships laden with stores, on board one of which was the fair Berengaria of Navarre, the betrothed of Richard, and placed under the immediate care of his sister Joan, queen of Sicily. The second line consisted of 13 ships; the third of 14; the fourth of 20; the fifth of 30; the sixth of 40; the seventh of 60; and in the eighth line Richard himself brought up the rear in his galleys. In this irregularly shaped wedge they proceeded to the eastward under sail. In the description of a battle which took place a short time before this (1190) we are told that the Saracens "brought out their galleys (from Acre) two by two (column of twos)* and preserving a seemly array in their advance rowed out to the open sea to fight; our fleet (the Christians) making an oblique circuit to the left † removed to a distance so that the enemy should not be denied free egress. "Our ships were disposed in a curve, (the old concave order,) so that if the enemy attempted to break through they might be enclosed and defeated." "In the upper tiers the shields, interlaced, were placed circularly." So had the ancients done; and so early were the attempts to provide ships with armor to resist missiles!

In 1571 was fought the celebrated battle of Lepanto, which closes the oar period in the Mediterranean. It had long since closed in the Atlantic. The scholarly and fervid pens of Prescott and of Motley, and the critical analysis by the author of "Fleets of the World" have rendered this battle familiar to the generality of readers. With all the splendor with which the opposing fleets were arrayed, the immediate results of the battle were, in a tactical point of view, "as barren," says Motley, "as the waves upon which it had been won." "It is an error to speak of the victory as barren" says Prescott, in quite a different sense, and referring to its remoter consequences, "for its *moral* effect was greatly adverse to the Turks, and from it dates the decline of the Ottoman Empire." (Motley's Dutch Republic. Prescott's Philip II.) Both were

* Signal No. 74. † Signal Left oblique.

right. The remarkable feature of the battle was in its being among the very first of sea fights where heavy ordnance was employed.

Both fleets, we are told, were formed in the concave order, such as we have seen in the fleet of the Persian Megabetes off Artemisium. As the line of battle of that day required every ship to be heading towards the point of attack, the guns, to be effective, had to be placed so as to fire in the same direction; but, as vessels were still liable to be rammed, guns had to be placed in the sides and sterns also, to bear upon an enemy, making an attack from astern or abeam. Thus they had at this early day a practically full circle of fire. In this fight too, was clearly demonstrated the great advantage of a few guns of heavy calibre, over a larger number of lighter weight.

Although sails had been used, and several battles fought under sail, before this time, yet counting from Làde to Lepanto, we may consider the oar period to cover a space of a little over two thousand years. From the study of the operations of the Navies of antiquity, the student should pass to the histories of the Italian Navies. The protracted Naval wars between the sister republics of Venice and Genoa, are replete with lessons in tactics and strategy.

Sail Period. It must not be supposed that the oar period terminated abruptly, nor that that of sails sprang suddenly into existence. * On the contrary two hundred and thirty years before Lepanto, Edward III, had carried his fleet in under sail, and had fought and won the great battle of Sluys, already referred to. At the battle of Damme, the first great fleet fight between the English and French, the English had "sailed in" over a hundred years previously (1213). In both of these battles it must be observed that the attack was made on ships at anchor. The first regular sea fight under sail in English history occurred off the North Foreland, (Aug. 1217), between an English squadron commanded by Hubert de Burgh, and a French force commanded by the famous Eustace the Monk. With a fresh southerly wind the French were "going large" and steering around the North Foreland; the English kept their luff as if bound for Calais, and having gained the wind of the French squadron, they bore down on them, threw their grapnels on board and fastened the vessels together. After fighting for some time the English boarded, and, cutting away the rigging and halliards, with axes, "the sails fell over the French." After this the enemy made but

* The change from the one period to the other was so gradual that the tactics under oars was for a time applied to fleets under sail. Sixteen years after the battle of Lepanto the great Spanish Armada sailed up the English channel in the ancient crescent shaped, or concave order.

little resistance, were defeated with immense slaughter, and many of the vessels were sunk by being rammed with the iron prows of the galleys. It will be seen by this that from the very first the English sought to obtain the weather gauge; and, further, that the cutting away of the halliards was but a repetition of the stratagem made use of by the Romans under Cæsar, who, in the great sea fight with the Veneti, cut away their halliards with *falces*, and by thus letting down their sails prevented their escape. * But with the introduction of ordnance, the gradual increase in the number of sails and masts, including the bowsprit, and the greater size of the war vessels, a radical change necessarily took place in naval tactics. Ramming under sail, was not practicable; nor was it desirable to run along-side and grapple. Instead of the simple and precise tactics of the ancients, whereby the change from one order to another could be performed with almost mathematical exactness, the inconstant wind now became the prime element on which the speed and direction of the fleet were mainly to depend. The interim between ancient and modern tactics lasted, reckoning from Lepanto to the battle off the Texel, 94 years.

In sailing vessels the offensive weapons being placed on the side of the ship, and the ship being under better control when by the wind, it was natural that when two or more vessels were operating together they should form for battle in a *close hauled line ahead.* Sailing in line ahead, six points (in actual practice seven points) from the wind, became, therefore, the technical *order of battle.* It is obvious from this that two fleets engaging on the same tack would find themselves on parallel lines and at right angles to the direction of attack. It was not however until 1665 that this order of battle, and the various orders which grew out of it, were regularly systematized. "This order of battle," says Paul Hoste, "was exactly observed for the first time in the battle off the Texel, where the Duke of York defeated the Dutch on the 3rd June, 1665, and it is to him that we are indebted for it in all its perfection." We have the testimony of James II himself on this point.

"On the 15th of March, 1665, the Duke of York went to Gunfleet, the general rendezvous of the fleet, and hastened their equipment. He ordered all the flag officers on board with him every morning to agree on the order of battle and rank. In former battles no order was kept,

* This practice was continued by the French of modern times, who always fired high to cut away the enemy's spars and rigging.

and this, under the Duke of York, was the first in which fighting in a line and regular form of battle was observed." (Autobiography of James II). Such was the origin of the famous "Fighting and Sailing Instructions" so often quoted. It does not seem that they were ever given to the public, though they continued to be the rule and guide for British admirals for many generations.*

Thirty-one years after the instructions were issued, or in 1696, Father Paul l' Hoste wrote his modest preface in Toulon. "The Marechal de Tourville has communicated his ideas to me," he says, "and ordered me to compose a treatise on a subject which, I think, has not yet been treated of." This treatise, giving "clear, simple and practical rules for naval evolutions, drawn from mathematical principles," is admitted by English writers to be "the root from which all other works on naval tactics have grown." Notwithstanding the confessed merits of Paul Hoste's work it was considerably over a century before a respectable translation of it appeared in England!

In 1762 was published Lieutenant Christopher O'Bryen's English translation of the 1st and 5th parts of Paul Hoste's work; and in 1790 Mr. John Clerk's Essay on Naval Tactics appeared.

The discussion which Lord Rodney's manœuvre of cutting through the French line in 1782 gave rise to, on the question of originality, shows how little attention had been given to the study of the art of war in the English navy at that day. Clerk's essay served its purpose, however, in calling attention to the subject of a manœuvre which had long been practised by most of the great naval captains; and he is deserving of credit for first enunciating the principle in an abstract form. In 1834 an English translation of Paul'l Hoste by Captain J. D. Boswell, R. N. was published; a work which at once took its place as a standard text book on Naval Evolutions under sail.

The introduction of steam as a motor power terminated the sail period which had lasted, reckoning from the battle of Lepanto, to the battle of Lissa, the first important sea-fight under steam, 295 years.

Steam Period. In naming Ladé, Lepanto and Lissa, it is to be understood, that they are arbitrarily assumed merely for the purpose of marking the great tactical eras. Considering the duration of the preceding periods, the changes of late years have been rapid and important.

* They were printed for private circulation. One copy may still be seen in the library of the Royal United Service Institute, London.

Following the introduction of steam came increased power of ordnance; defensive armor; the addition of the spur, the *rostrum* of the ancients, and the consequent disappearance of the bowsprit. In the *Monitor* system these advantages culminated, with the addition of well protected-motor and steering power, a practically full circle of fire, and the exposing of the least possible surface to hostile shot. The *Monitor* was the crystallization of forty centuries of thought on attack and defense and exhibited, in a singular manner, the old Norse element of the American Navy: Ericsson (Swedish, *son of Eric*) built her; Dahlgren (Swedish, *branch of a Valley,*) armed her; and Worden (Swedish *Wordig, Worthy*) fought her. How the ancient Skalds would have struck their wild harps in weaving such names in heroic verse! How they would have written them in "immortal runes!"

The successful encounter of the *Monitor* with the *Merrimac* effected a sudden and complete change in naval warfare, and gave an impetus to the construction of defensive armor and the manufacture of heavy ordnance entirely without parallel in the history of the world But as the monitors were designed for coast and harbor defense and not for navigating the open sea, they cannot be classed, in a tactical point of view, as vessels that can take their places in the line of battle on the broad ocean.

It is to Lissa, therefore, fought on the 20th July, 1866, between two squadrons of sea-going iron clads, in which the spur was effectively used, that we must look for marking the new era.

Among those who undertook, in the earlier days of steam navigation, to devise a system of tactics suited to the change in the mode of propulsion, Sir Howard Douglass seems to have been one of the few who approached the subject in the true spirit. Educated as a soldier and with a strong proclivity for naval affairs, he was peculiarly well qualified for the task. He followed instinctively the very course into which the ancients had been led by force of circumstances; and applied the rules of the military art to the military movements of a fleet. Though written in the early days of the Steam period, "Naval Warfare with Steam" has lost none of its value as a text book. But it deals chiefly with the tactics of battles, leaving the work, as a whole, incomplete. What was wanting in the work of Sir Howard Douglass, however, has been supplied by Commodore Parker, who has deduced a system of elementary fleet tactics under steam, which, while it fulfills all the novel conditions imposed by recent changes, is yet so perfectly adapted to the end in view that it is difficult to see how it could be altered to advan-

tage. Now, Commodore Parker attained his results just as Sir Howard Douglass had done, and in a manner analogous to that of the Greeks of twenty three centuries before, by applying in this case, the elementary movements of field artillery to the movements of a flotilla. That the system of naval tactics of the oar and the steam period should be similar will strike no one as extraordinary who for a moment reflects that as the two methods of attack require the same technical order of battle, the systems growing out of that order must, in their most perfect form, be the same. The numerous foot notes given in the description of the ancient tactics have already defined the present system. The new line of battle is given on page 10, fig. 1. "Fleet Tactics under steam", where the several vessels are supposed to be heading in the direction of the attack.*

Having established his line of battle, the author of the work referred to judiciously ignores the nomenclature of the late system of sail tactics, substituting therefor the terms used for similar formations in the army. The old "line abreast" gives place to the "line;" the "line ahead" to "column," and "line of bearing" or "bow and quarter line," to "echelon" (single and double.) Those three formations, then, and the movements necessary to pass from one to another constitute, in the main, the elementary tactics designed by that officer and adopted by his government.

Commodore Parker makes some valuable suggestions in regard to the Commanders-in-chief, whose *rôle*, he justly observes, (page 219) approximates to that of the General. "He should take post, whence, without being an active participant in it, he may overlook the battle" and direct his forces.

It was the indiscreet valor of the Spartan Callicratidas and a false idea of his duty as Commander-in-chief, that cost him his life, and contributed largely to the loss of his fleet at Arginusæ. For his conduct on this occasion, and his answer to the advice not to attack the Athenians, that "he could not fly without shame," he was severely criticized by both Cicero and Plutarch (although the latter extols him as of all Greeks the most worthy of admiration); for he sacrificed his fleet and the interests of his country to his own reputation for personal courage.†

* It is very evident from this order of battle that the modern ship of the line must have a full circle of fire, as at Lepanto. That every vessel of war is now fitted for ramming is assumed as a matter of course.

† Plutarch in his life of Pelopidas makes some very just observations on this subject. Contrast the reply given above with that of "Old Antigomus"—: The latter has the true Nelsonian ring.

Philip, (son of Demetrius,) during the great sea-fight with Attalus, already referred to, withdrew in a small vessel from the heat of battle, and took his station whence he could survey the entire scene of conflict. This enabled him to profit by the mistake of Attalus, and to capture the galley of that Prince. After the Comte de Grasse was made prisoner in his flag-ship, the *Ville de Paris*, in 1782, the French Government issued orders to the effect that Commanders of squadrons should do precisely what Commodore Parker here recommends. It was in consequence of this order that De Suffern, some months later, shifted his flag to the small frigate *Cleopatre* in one of the battles with Sir Ed. Hughes. Admiral Porter always preferred, during battle, to be on board a small and fast steamer. This enabled him to view his entire line and place himself wherever his presence might be needed. At the bombardment of Fort Fisher he carried his flag on board the *Malvern*, a small side-wheel steamer of 600 tons, that had been captured in running the blockade, and purchased for the navy.

In establishing the fact of a similarity between two tactical systems widely separated by time—more interesting to the speculative mind, perhaps, than valuable to the student, there is no intention of holding up the tactics of the ancients as worthy of imitation. Though we acknowledge the Greeks to be our masters in the art of war, yet tactics change with the change of weapons; what may have been admirable in their day might prove, therefore, utterly inpracticable now. With strategy it is not so. The capture of Sphacteria (Navarino) by the Athenian fleet was a fine exhibtion of strategy. As a diversion it was completely successful, bringing the Spartan Campaign in Attica to an abrupt termination. It has justly been regarded as one of the most brilliant *coups* of the Pelopennesian war. When Regulus defeated the Carthaginian fleet he might have continued on, to assist in the investment of Lilybæum; but he chose rather to cross over to Africa, making a great strategic move, and one which, under an abler general, would have resulted in the speedy reduction of Carthage. When Alexander the Great crossed into Asia, had the advice of Memnon the Rhodian been followed, and the Phœnician fleet sent to the coast of Greece as a diversion, the most splendid campaign in all history might possibly have been spoiled. Any of these movements would be judged skillful to-day.

The consummate strategy of Themistocles and Alcibiades are even now commended. The principles of strategy are immutable. Agatho-

cles, king of Syracuse, William the Conqueror, and Cortez, each in his own time landed on an enemy's shore and burned his ships behind him. And so, to-day, any great leader, having the same motive, would resort to an equally desperate measure.

In regard to the tactics of battles it is not intended to speak further than to observe that there are certain general rules here too which are unchangeable.

The parallel, the most ancient order of battle, for example, has been condemned by military writers as the weakest of all. The parallel order reënforced at one point, is, however, based on sound principles.

The oblique order, is the most approved. It gives many chances for success, and provides, as far as possible, against mishaps, says Dufour. "L'ordre oblique est l'ordre de bataille le plus usite, le plus savant, et le plus susceptible de combinaisons." (Guibert, quoted by Sir Howard Douglass). With the advanced wing reënforced it is particularly strong, and in strict accordance with that principle so much dwelt upon, that an overwhelming force should be thrown on one decisive point of the enemy so as to crush that, and beat him in detail.

The double echelon is also a very strong formation, and its application to a fleet is sanctioned by the enlightened judgment of Sir Howard Douglass. Again, very great stress is laid by military writers on the necessity, in every case, for a reserve to reënforce a weak point, or aid in crushing the decisive point. These orders of battle are all applicable to a fleet; while celerity of movement, the advantages of assuming the offensive, great range and accuracy of fire, an unobstructed circle of fire, and the presenting of the smallest target for the enemy's missiles, all apply with equal force to naval operations as well as to those on shore. Now all these points were clearly recognized by the ancients.

It would be folly, even were it practicable, to attempt to form the new line of battle either with vessels that could not ram, or that carried their guns in broad-side only. It would be equally unwise to attempt to oppose short range guns to long; or low to high speed. And, finally, we are forced to the conclusion that the true way to study naval tactics is to do so in connection with the study of Military and Naval history and of the science of war as taught at the best military schools.

In the ardor of pursuing the theme we have been led somewhat beyond the range of the volumes under consideration, and must come to an abrupt conclusion. Full of historical research as these works undoubtedly are, the author himself teaches us, perhaps unwittingly, the best and most practical lesson, in affording by his own scholarship a

brilliant illustration of the change from the "rough and tough old Commodore" to the higher culture of the modern school.

Falconer, the Sailor-poet thought that going to sea made one stupid: that at sea the intellect was "blasted in the barren shade."

> "Sad Ocean's genius in untimely hour
> Withers the bloom of every springing flower:
> Here fancy droops, while sullen clouds and storm
> The generous climate of the soul deform."

However it may have been in his day of long passages under sail, it certainly is not so in the steam period when more time is afforded for study and reflection. We commend the careful perusal of "Fleets of the World" to our young officers who are, in time, to mould *our* fleet and shape its destinies, in the hope that, at least so far as the economy and efficiency of the Navy are concerned, we may look confidently to the fulfillment of the celebrated prophecy that,

> "The young America will soar to be what Athens was."